

**Fermilab****LINAC Upgrade Cavity Parameters
LU-156**FROM: T. Jurgens
DATE: December 13, 1989

This is the latest version of the Linac Upgrade reference design cavity parameters. Please discard any old versions.

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LINAC UPGRADE REFERENCE DESIGN CAVITY PARAMETERS
Energy in MeV, Angles in degrees and Lengths in centimeters

Date of this List: 13-DEC89 15:19:48
Data in this table are for protons, not H-

KEin = 116.54 BEtaIn = 0.4569 LAMBDA =37.2413 Estimated K1 = 0.0460
AccCavInRadius(Rac) = 13.4550 SdCavInRadius(Rsc) = 8.6591 SdCavPostRadius(Rscp) = 3.0437 Web = 0.7600
AccCavOutRadius(Rao) = 14.4780 SdCavOutRadius(Rso) = 9.6520 SdCavWallThickness(Wt) = 0.9525 BeamPipeRadius(Rb) = 1.6000
NoseTipBottomRadius(Rtipb) = 0.2210 NoseAngle(Nangle) = 20.00

Dcc = 18.4000 Ls(slot length) = 10.5159 Racp = 12.6632

MOD / SEC	KEout	BETAout	design	(X)			(C1)			(SG)			ACC CAV offset			ACC CAV freq			Alpha Theta			d(Ls)		
				BETA	ACC CAV	BETA* LAM	SDCV	HF	over2	GAPa	834.6	Y	R	freq	d(Y)	d(Dcc)	Rnt	Y/c1	Phi	F				
				0	1	116.54	0.4569	0.4569	1.855841	8.63371	0.44828	3.89441	3.94185	820.80	49.07	74.78	0.685	-1.639	3.78680	0.448	52.74	1.39803		
0	1	125.06	0.4705	0.4637	1.89084	8.63371	0.44828	3.89441	3.94185	820.80	49.07	74.78	0.677	-1.639	3.79790	0.451	53.06	1.41715						
1	2	133.83	0.4838	0.4771	1.95558	8.88430	0.47172	4.06199	4.06715	820.59	49.07	74.78	0.663	-1.639	3.81994	0.457	53.84	1.45865						
1	3	142.84	0.4968	0.4902	2.01896	9.12868	0.49515	4.22678	4.18934	820.39	49.07	74.78	0.650	-1.639	3.84135	0.463	54.19	1.49845						
1	4	152.07	0.5094	0.5030	2.08096	9.36688	0.51855	4.38863	4.30844	820.20	49.07	74.78	0.637	-1.639	3.86213	0.469	54.71	1.53663						
2	1	161.25	0.5213	0.5153	2.14073	9.59669	0.54154	4.54518	4.42284	820.02	49.07	74.78	0.626	-1.639	3.88201	0.474	55.18	1.57278						
2	2	170.63	0.5330	0.5271	2.19830	9.81531	0.56407	4.69840	4.53265	819.87	49.07	74.78	0.616	-1.639	3.90103	0.478	55.82	1.60695						
2	3	180.21	0.5443	0.5386	2.25455	10.02924	0.58647	4.84457	4.63962	819.71	49.07	74.78	0.607	-1.639	3.91949	0.483	56.03	1.63983						
2	4	189.98	0.5553	0.5498	2.30956	10.23756	0.60870	4.98965	4.74378	819.54	49.07	74.78	0.598	-1.639	3.93740	0.487	56.42	1.67145						
3	1	199.69	0.5658	0.5606	2.36250	10.43784	0.63047	5.12984	4.84392	819.40	49.07	74.78	0.590	-1.639	3.95456	0.491	56.78	1.70150						
3	2	209.56	0.5760	0.5709	2.41358	10.63032	0.65175	5.26520	4.94016	819.29	49.07	74.78	0.582	-1.639	3.97099	0.495	57.11	1.73006						
3	3	219.80	0.5860	0.5810	2.46353	10.81802	0.67284	5.39778	5.03401	819.13	49.07	74.78	0.575	-1.639	3.98897	0.499	57.43	1.75762						
3	4	229.79	0.5956	0.5907	2.51212	11.00011	0.69363	5.52693	5.12505	819.03	49.07	74.78	0.569	-1.639	4.00242	0.502	57.73	1.78409						
4	1	239.91	0.6048	0.6002	2.55909	11.17562	0.71397	5.65190	5.84392	818.89	49.07	74.78	0.562	-1.639	4.01727	0.506	58.01	1.80936						
4	2	250.17	0.6138	0.6092	2.60438	11.34447	0.73381	5.77255	5.29723	818.80	49.07	74.78	0.557	-1.639	4.03151	0.509	58.27	1.83346						
4	3	260.56	0.6225	0.6181	2.64858	11.50884	0.75339	5.89040	5.37942	818.70	49.07	74.78	0.551	-1.639	4.04534	0.512	58.52	1.85672						
4	4	271.09	0.6309	0.6267	2.69171	11.66884	0.77270	6.00549	5.45942	818.57	49.07	74.78	0.546	-1.639	4.05876	0.516	58.76	1.87918						
5	1	281.55	0.6390	0.6349	2.73339	11.82311	0.79155	6.11678	5.53656	818.50	49.07	74.78	0.541	-1.639	4.07166	0.517	58.98	1.90066						
5	2	292.13	0.6469	0.6429	2.77365	11.97182	0.80994	6.22437	5.61091	818.38	49.07	74.78	0.537	-1.639	4.08407	0.520	59.19	1.92122						
5	3	302.83	0.6548	0.6507	2.81294	12.11661	0.82805	6.32941	5.68331	818.32	49.07	74.78	0.533	-1.639	4.09612	0.522	59.39	1.94110						
5	4	313.65	0.6620	0.6583	2.85149	12.25838	0.84597	6.43251	5.75419	818.22	49.07	74.78	0.529	-1.639	4.10789	0.526	59.59	1.96043						
6	1	324.36	0.6692	0.6656	2.88832	12.39354	0.86324	6.53105	5.82177	818.16	49.07	74.78	0.525	-1.639	4.11908	0.527	59.77	1.97876						
6	2	335.18	0.6761	0.6726	2.92410	12.52461	0.88015	6.62682	5.88730	818.07	49.07	74.78	0.521	-1.639	4.12991	0.529	59.94	1.99639						
6	3	346.11	0.6829	0.6795	2.95902	12.65228	0.89679	6.72031	5.95114	818.01	49.07	74.78	0.518	-1.639	4.14044	0.531	60.11	2.01349						
6	4	357.13	0.6895	0.6862	2.99309	12.77665	0.91314	6.81157	6.01332	817.95	49.07	74.78	0.514	-1.639	4.15067	0.533	60.27	2.03004						
7	1	368.08	0.6958	0.6926	3.02609	12.89687	0.92909	6.89996	6.07344	817.91	49.07	74.78	0.511	-1.639	4.16054	0.535	60.42	2.04595						
7	2	379.12	0.7020	0.6989	3.05804	13.01307	0.94463	6.98656	6.13154	817.86	49.07	74.78	0.508	-1.639	4.17005	0.537	60.58	2.06126						
7	3	390.25	0.7080	0.7049	3.08923	13.12631	0.95991	7.08912	6.18816	817.79	49.07	74.78	0.505	-1.639	4.17931	0.539	60.70	2.07610						
7	4	401.46	0.7138	0.7109	3.11967	13.23667	0.97491	7.15069	6.24333	817.77	49.07	74.78	0.503	-1.639	4.18831	0.549	60.83	2.09049						

LINAC UPGRADE REFERENCE DESIGN CAVITY PARAMETERS
Energy in MeV, Angles in degrees and Lengths in inches

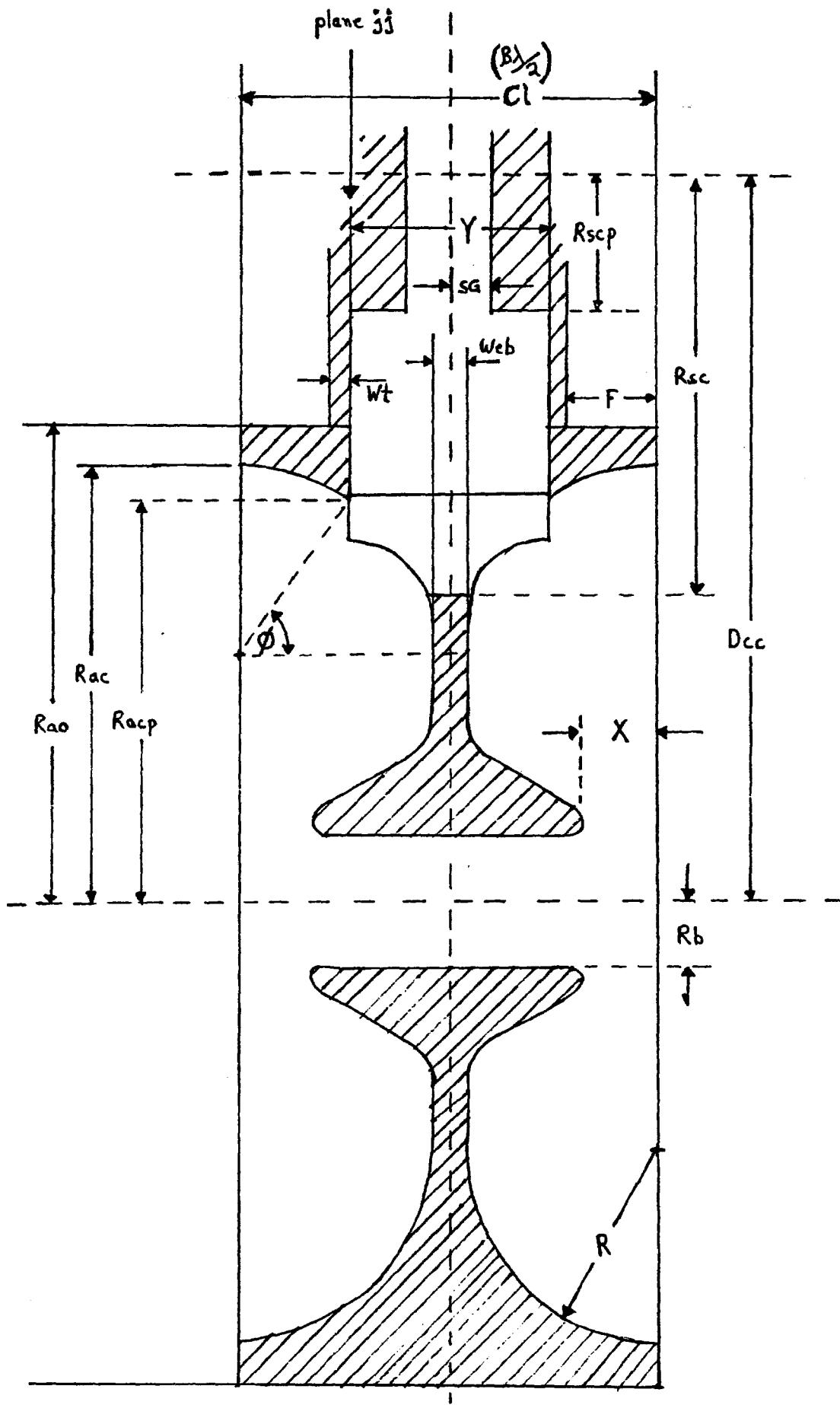
KEin = 116.54 BETain = 0.4569 LAMBDA =14.6819 Estimated K1 = 0.0480
AccAvInRadius(Rac) = 5.2972 SdCavInRadius(Rsc) = 3.4091 SdCavPostRadius(Rscp) = 1.1983 Web = 0.2953
AccAvOutRadius(Rao) = 5.7000 SdCavOutRadius(Rso) = 3.8000 SdCavWallThk(Wt) = 0.3750 BeamPipeRadius(Rb) = 0.5906
NoseTipBottomRadius(Rtipb) = 0.0870 NoseTipTopRadius(Rtip) = 0.2766 NoseAngle(Nangle) = 20.00

Dcc = 7.2441 Ls(slot length) = 4.1401 Racp = 4.9855

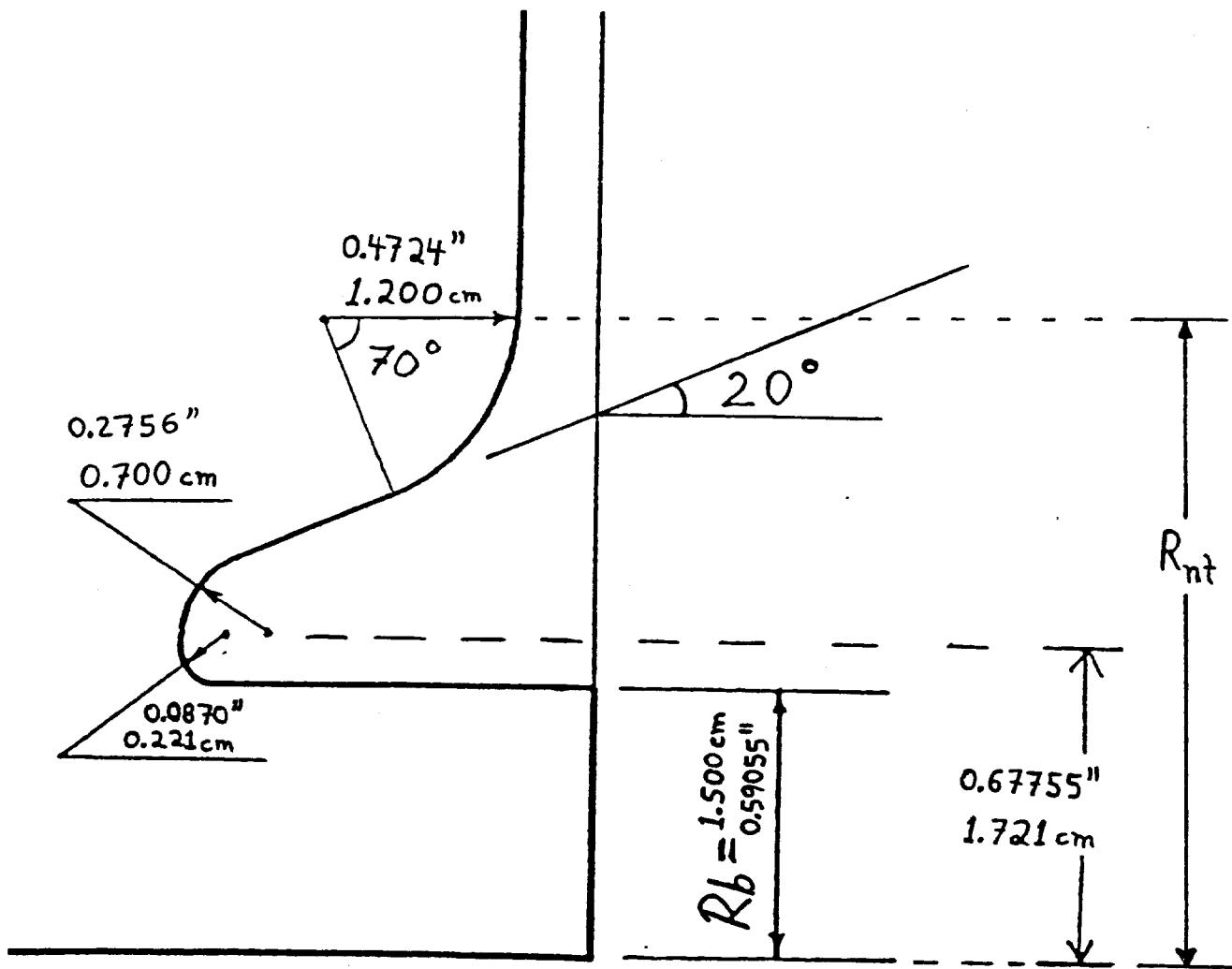
MOD/SEC	KEout	BETAout	design	(X)			(C1)			(SG)			ACC CAV offset			ACC CAV freq			d(Y)			d(Ls)		
				BETA	ACC CAV over2	GAP	BETA*LAM	SDCV	HF	R	Y	Alpha	Theta	d(Y)	d(Dcc)	Rnt	Y/C1	Phi	F					
0	1	116.54	0.4569	0.4569	0.73168	3.34954	0.17194	1.50030	1.52713	820.91	49.07	74.78	0.685	-1.639	1.49086	0.176	52.74	0.54982						
0	2	116.54	0.4569	0.4569	0.73168	3.34954	0.17194	1.50030	1.52713	820.91	49.07	74.78	0.685	-1.639	1.49086	0.176	52.74	0.54982						
1	1	125.06	0.4705	0.4637	0.74443	3.39910	0.17649	1.53323	1.55191	820.80	49.07	74.78	0.677	-1.639	1.49524	0.178	53.05	0.55793						
1	2	133.83	0.4838	0.4771	0.76992	3.49776	0.18672	1.59921	1.60124	820.59	49.07	74.78	0.663	-1.639	1.50391	0.180	53.84	0.57472						
1	3	142.84	0.4968	0.4902	0.79487	3.59397	0.19494	1.66409	1.64935	820.39	49.07	74.78	0.650	-1.639	1.51234	0.182	54.19	0.58994						
1	4	152.07	0.5094	0.5030	0.81928	3.68775	0.20415	1.72781	1.69624	820.20	49.07	74.78	0.637	-1.639	1.52052	0.184	54.71	0.60497						
2	1	181.25	0.5213	0.5153	0.84281	3.777783	0.21320	1.78944	1.74128	820.02	49.07	74.78	0.626	-1.639	1.52835	0.186	55.18	0.61920						
2	2	170.63	0.5330	0.5271	0.86547	3.86429	0.22208	1.84897	1.78491	819.87	49.07	74.78	0.616	-1.639	1.53584	0.188	55.82	0.63266						
2	3	180.21	0.5443	0.5386	0.88762	3.94852	0.23089	1.90731	1.82662	819.71	49.07	74.78	0.607	-1.639	1.54311	0.190	56.03	0.64580						
2	4	189.98	0.5553	0.5498	0.90925	4.03053	0.23985	1.96443	1.86763	819.54	49.07	74.78	0.598	-1.639	1.55016	0.192	56.42	0.65805						
3	1	199.69	0.5658	0.5606	0.93012	4.10939	0.248822	2.01962	1.90706	819.40	49.07	74.78	0.590	-1.639	1.55691	0.193	56.78	0.66988						
3	2	209.56	0.5760	0.5709	0.95023	4.18618	0.25659	2.027291	1.94494	819.29	49.07	74.78	0.582	-1.639	1.56338	0.195	57.11	0.68113						
3	3	219.60	0.5889	0.5810	0.96989	4.25906	0.26490	2.12561	1.98161	819.13	49.07	74.78	0.575	-1.639	1.56967	0.196	57.43	0.69198						
3	4	229.79	0.5956	0.5907	0.98903	4.33076	0.27308	2.17598	2.01774	819.03	49.07	74.78	0.569	-1.639	1.57576	0.198	57.73	0.70240						
4	1	239.91	0.6048	0.6002	1.00751	4.39985	0.28109	2.22516	2.05229	818.89	49.07	74.78	0.562	-1.639	1.58160	0.199	58.01	0.71235						
4	2	250.17	0.6138	0.6092	1.02535	4.46633	0.28890	2.08553	1.818.80	818.80	49.07	74.78	0.557	-1.639	1.58721	0.200	58.27	0.72183						
4	3	260.56	0.6225	0.6181	1.04275	4.53104	0.29661	2.31906	2.11788	818.70	49.07	74.78	0.551	-1.639	1.59265	0.202	58.52	0.73099						
4	4	271.09	0.6309	0.6287	1.05973	4.59403	0.30421	2.36438	2.14938	818.57	49.07	74.78	0.546	-1.639	1.59794	0.203	58.76	0.73983						
5	1	281.55	0.6390	0.6349	1.07614	4.65477	0.31164	2.40818	2.17975	818.50	49.07	74.78	0.541	-1.639	1.60302	0.204	58.98	0.74829						
5	2	292.13	0.6489	0.6429	1.09199	4.71331	0.31887	2.45054	2.20902	818.38	49.07	74.78	0.537	-1.639	1.60790	0.205	59.19	0.75639						
5	3	302.83	0.6546	0.6507	1.10746	4.77032	0.32600	2.49189	2.23752	818.32	49.07	74.78	0.533	-1.639	1.61265	0.206	59.39	0.76421						
5	4	313.65	0.6620	0.6583	1.12264	4.82614	0.33306	2.53249	2.26563	818.22	49.07	74.78	0.529	-1.639	1.61728	0.207	59.59	0.77182						
6	1	324.36	0.6692	0.6656	1.13713	4.87934	0.33986	2.57128	2.29203	818.18	49.07	74.78	0.525	-1.639	1.62169	0.207	59.77	0.77903						
6	2	335.18	0.6761	0.6726	1.15122	4.93095	0.34652	2.60898	2.311784	818.07	49.07	74.78	0.521	-1.639	1.62595	0.208	59.94	0.78598						
6	3	346.11	0.6829	0.6795	1.16497	4.98121	0.35307	2.64579	2.34297	818.01	49.07	74.78	0.518	-1.639	1.63009	0.209	60.11	0.79271						
6	4	357.13	0.6895	0.6862	1.17838	5.03018	0.35950	2.68172	2.36745	817.95	49.07	74.78	0.514	-1.639	1.63412	0.210	60.27	0.79923						
7	1	368.08	0.6958	0.6926	1.19138	5.07751	0.36678	2.71652	2.39112	817.91	49.07	74.78	0.511	-1.639	1.63801	0.211	60.42	0.80549						
7	2	379.12	0.7020	0.6989	1.20395	5.12326	0.37190	2.75022	2.41399	817.86	49.07	74.78	0.508	-1.639	1.64175	0.211	60.58	0.81152						
7	3	390.25	0.7080	0.7049	1.21623	5.16784	0.37792	2.78312	2.43628	817.79	49.07	74.78	0.505	-1.639	1.64540	0.212	60.70	0.81136						
7	4	401.46	0.7138	0.7109	1.22822	5.21129	0.38382	2.81523	2.45801	817.77	49.07	74.78	0.503	-1.639	1.64894	0.213	60.83	0.82303						

LINAC UPGRADE REFERENCE DESIGN CAVITY PARAMETERS SHORT LISTING
 Date of this list: 13-DEC-89 15:19:46
 Energy in MeV, Angles in degrees and Lengths in inches

	(X)	(C1)	(SG)	ACC CAV	BETA* LAM	SDCV HF	Y	R	Rnt	F
MOD/SEC	HFGAP	over2	GAPa834.6							
0 1	0.7317	3.3495	0.1719	1.5003	1.5271	1.4909	0.5496			
0 2	0.7317	3.3495	0.1719	1.5003	1.5271	1.4909	0.5496			
1 1	0.7444	3.3991	0.1765	1.5332	1.5619	1.4952	0.5579			
1 2	0.7699	3.4978	0.1857	1.5992	1.6012	1.5039	0.5743			
1 3	0.7949	3.5940	0.1949	1.6641	1.6493	1.5123	0.5899			
1 4	0.8193	3.6877	0.2042	1.7278	1.6962	1.5205	0.6050			
2 1	0.8428	3.7778	0.2132	1.7894	1.7413	1.5284	0.6192			
2 2	0.8655	3.8643	0.2221	1.8490	1.7845	1.5358	0.6327			
2 3	0.8876	3.9485	0.2309	1.9073	1.8266	1.5431	0.6456			
2 4	0.9093	4.0305	0.2396	1.9644	1.8676	1.5502	0.6581			
3 1	0.9301	4.1094	0.2482	2.0196	1.9071	1.5569	0.6699			
3 2	0.9502	4.1852	0.2566	2.0729	1.9449	1.5634	0.6811			
3 3	0.9699	4.2591	0.2649	2.1251	1.9819	1.5697	0.6920			
3 4	0.9890	4.3308	0.2731	2.1760	2.0177	1.5758	0.7024			
4 1	1.0075	4.3999	0.2811	2.2252	2.0523	1.5816	0.7123			
4 2	1.0253	4.4663	0.2889	2.2727	2.0855	1.5872	0.7218			
4 3	1.0427	4.5310	0.2966	2.3191	2.1179	1.5927	0.7310			
4 4	1.0597	4.5940	0.3042	2.3644	2.1494	1.5979	0.7398			
5 1	1.0761	4.6548	0.3116	2.4082	2.1797	1.6030	0.7483			
5 2	1.0920	4.7133	0.3189	2.4505	2.2090	1.6079	0.7564			
5 3	1.1075	4.7703	0.3260	2.4919	2.2375	1.6126	0.7642			
5 4	1.1226	4.8261	0.3331	2.5325	2.2654	1.6173	0.7718			
6 1	1.1371	4.8793	0.3399	2.5713	2.2920	1.6217	0.7790			
6 2	1.1512	4.9309	0.3465	2.6090	2.3178	1.6259	0.7860			
6 3	1.1650	4.9812	0.3531	2.6458	2.3430	1.6301	0.7927			
6 4	1.1784	5.0302	0.3595	2.6817	2.3675	1.6341	0.7992			
7 1	1.1914	5.0775	0.3658	2.7165	2.3911	1.6380	0.8055			
7 2	1.2040	5.1233	0.3719	2.7502	2.4140	1.6418	0.8115			
7 3	1.2182	5.1678	0.3779	2.7831	2.4363	1.6454	0.8174			
7 4	1.2282	5.2113	0.3838	2.8152	2.4580	1.6489	0.8230			



Nosecone Detail



plane jj

